

Informal Waste Workers Contribution Bangalore

Pinky Chandran, Nalini Shekar, Marwan Abubaker, Akshay Yadav

¹ Jain University, Bangalore, India

² Hasiru Dala, Bangalore, India

³SWMRT, Bangalore, India

⁴Hasiru Dala, Bangalore, India

* Tel: 09845888686, 07829777737, 09945686274 and 09972315305 E-mail: pinky.chandran@gmail.com, nalinipalyam1@gmail.com, marie.abubaker@gmail.com, y_akshay13@yahoo.com

Abstract

Following the Lok Adalat's direction in 2011, the Bruhat Bengaluru Mahanagara Palike (BBMP) became the first municipality in the country to register waste-pickers and enumerate scrap dealers. The paper analyses the demographic profile of these waste-pickers and looks at the economic aspect of informal recycling and their net contribution to the city.

As a part of the study, the paper will analyse 4175 waste-pickers to determine their economic contribution to the city, while extrapolating data for the estimated 15,000 waste-pickers in the city and will also detail the methodology of organizing waste-pickers and itinerant buyers towards the formation of a city wide membership based organization

The paper will also provide recommendations to ensure inclusive development moving away from exclusion and marginalization and the utilization of a highly skilled workforce in achieving sustainable and integrated SWM

1.0 Introduction

India is a part of the global trends where an increasing number of people live in urban areas. The number of towns and the absolute urban population in India has increased steadily over the last 60 years. Varying projections place urban population at about 590 million – 600 million in 2030. And Bangalore mirrors this trend. According to the 2011 census data, “The population density in Bangalore has risen 47% in the past decade as job opportunities and economic growth have lured people from across the nation to India’s Silicon Valley. The number of people living per square kilometer in the city has increased to 4,378 in 2011 from 2,985 in 2001”.ⁱ It comes as no surprise then that with population increase, economic growth and changing consumption patterns, solid waste generation, a byproduct of increasing urbanization is accelerating. Although the management of solid waste is the primary responsibility of the municipality, Solid Waste has three outlets: formal collection for disposal by the municipality, informal sector recovery for recycling, and waste that remains uncollected. (Beukering et al. 1996)ⁱⁱ

The informal sector forms a critical link in waste management and recycling and this paper attempts to study waste-picker's demographic profile in Bangalore and their net contribution to the city. Even though, the existence the informal sector's engagement in the recovery and recycling aspects of SWM in developing countries began to feed a burgeoning Marxist academic literature, which likened garbage pickers to self-employed proletarians (Birkbeck 1978; Blincow 1986), their work and contribution, like those of other enterprises in this sector, went broadly unacknowledged in the policy sphereⁱⁱⁱ. In Bangalore, the relevance and the value of the work performed by the informal sector is only now acquiring visibility.

On an average Bangalore generates about 3000- 4000 tonnes of municipal solid waste per day^{iv}, and follows a centralized approach of collection and transportation to the landfills. However despite this attitude of treating waste as disposal, several community based initiatives were initiated in the late 1980s, stressing the need for public participation in solid waste management. Center for Environment Education (CEE) started the Committee for Clean Bangalore in partnership with various organizations in 1989, to promote segregation at source. Twenty years later, in 2009, the Solid Waste Management Roundtable (SWMRT), a group of individuals and organizations got together to promote decentralized waste management in the city for efficient waste handling. SWMRT engaged with the Lok Adalat,(People's court) a system of alternative dispute resolution (non-adversarial system) from mid-2010 which led to certain significant directions to the BBMP to implement decentralized waste management across the city. In 2011, through the Alliance of Waste-pickers filed an affidavit for recognition of waste-pickers which led the Lok Adalat to issue the landmark directive to the BBMP was the registration and enumeration of waste-pickers and scrap dealers.

Following the directive, the BBMP Commissioner issued an official circular^v to register waste-pickers and itinerant buyers and enumerate scrap dealer, which is hailed as the first step towards formal recognition of their role. The BBMP also attained the unique distinction of being the country's first urban local body to initiate this process. On 9th August 2011, at the first Waste-pickers Convention, 200 waste-picker ID cards were distributed following the registration, a step towards officially acknowledging the indirect contribution of waste-pickers to the city. As of 2013, the BBMP has distributed over 5000 ID cards and have sanctioned additional 7000 registrations.

Waste pickers' contribution to reduction of municipal waste handling costs, resource recovery, environment conservation and climate change mitigation has been documented by various studies and the Expert Committee on Solid Waste Management constituted by the Hon. Supreme Court of India. Whilst conditions vary from place to place; waste collectors often suffer from harsh working conditions. They are exposed to tremendous health hazards, accidents and crises of all kinds. They live in slums in deplorable conditions, lacking access to water, sanitation and basic infrastructure. They usually have low social status and are exploited by contractors and intermediaries^{vi}. Two years hence, in terms of current attitudes towards the informal sector, acceptance from stakeholders is still negative, aggressive, unreceptive, sometimes bordered on hostility.

The paper is structured as follows. First, a general introduction into the profile of waste-pickers, and the role of waste-pickers in waste management, Government of India policies, initiatives and

reports, approach adopted by the BBMP in formally recognizing the informal sector's role in the city SWM, the demographic profile of these waste-pickers and looks at the economic aspect of informal recycling and their net contribution to the city and provide recommendations to ensure inclusive development moving away from exclusion and marginalization and the utilization a highly skilled workforce in achieving sustainable and integrated Solid Waste Management

2.0 Historical Background of Informal Waste Collectors

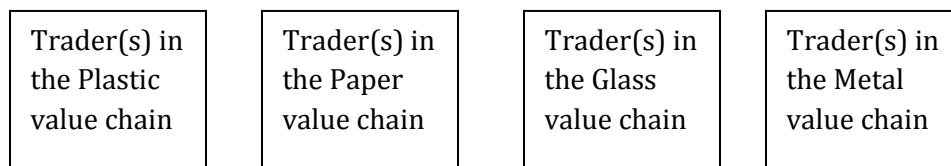
Urbanization is just a process; caste is a system, a way of life so deeply entrenched that it has become taken for granted. This caste system entrenchment has in turn translated into not only a lack of empathy, but a sense that certain people belong or deserve certain tasks, such as clearing garbage, or waste picking.^{vii} Cultural values attached to waste are deep rooted (Blinchow 1986). Waste collection in India goes back to the 17th century, where bones, rags and paper were among the first commodities to be collected. The caste system in Indian society, which continues to exist, it is a determining factor in the solid waste management system. Waste picking, along with any work related to garbage or the handling of carcasses and human excreta is traditionally bound to the lowest caste.^{viii} Accordingly, the low status of, and stigma against, those operating at the lower ends of the informal waste recovery economy, in particular, are just that much greater (Sicular 1992). And, this pejorative view is restricted not just to civil society, but also, for example, to municipal governments, whose hostility towards action in the informal economy has seriously impeded any kind of integration into the formal system (Cointreau-Levine 1994)

There is not much historical literature on castes of the informal sector involved in waste management in Karnataka. From the Survey conducted by the Committee on Improvement of Living and Working Conditions of Sweepers and Scavengers headed by I.P.D Salappa shows that besides the Scheduled Caste, there are Muslims, Christians, Lingayats, Kuruba and Mudaliars engaged in this profession-also pointing to the fact that people take to this vocation due economic compulsions as well.

The predominant castes in waste-picking include Adi Andhra, Adi Dravidas, Adi Karnataka and Bovis. Bovis also called Oddas belonged to sub caste Mannu Oddas meaning earth workers and the women are also engaged as domestic workers. The Adi Dravida also called Holeyas and the Adi Karnataka also called Madigas (Karanth 1995)^{ix}. However a 2010 study by Mythri Sarva Seva Samithi (MSSS) and CHF revealed that majority of the waste –pickers belonged to scheduled caste(SC), other backward caste category (OBC), Scheduled Tribes (ST) including nomadic tribes, sheik, kounder etc^x. Another disturbing trend is also the presence of the Hakki Pikki Tribes in waste-picking

2.1The Role of Informal Waste Workers in Waste Management

Re-searchers estimate that about 1% of the urban population in India is active in the informal recycling sector^{xi}. The informal waste sector is socially stratified in a pyramid with scrap collectors (waste pickers and itinerant waste buyers) at the bottom and re-processors at the top as shown in Fig 1.1



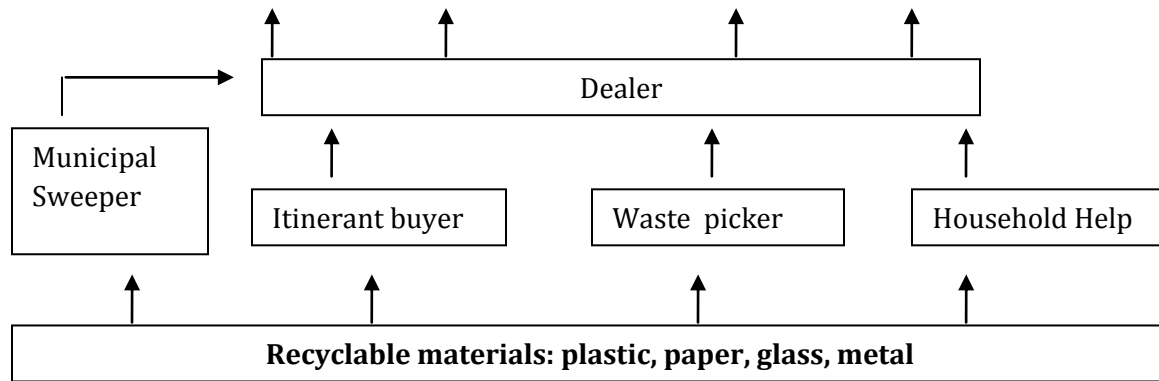


Fig 1.1: Generic Structure of the Informal Recovery & Recycling Chain in Developing Countries
xii

Scrap collection though an integral part of urban solid waste management is one of the lowest rungs of the informal sector. Scrap collection is undertaken by two categories of workers, waste pickers and itinerant buyers

2.2 Government of India policies, initiatives and reports

There are several rules and policies, government orders, steering committee reports in India that clearly state the need to integrate waste-pickers in the municipality's solid waste management system like the *High Power Committee on Solid Waste management under the Chairmanship of Prof. J.S. Bajaj, Member, Planning Commission, Government of India, 1995* ; *Report Of The Committee Constituted By The Hon'ble Supreme Court Of India (March, 1999)- Recommendations For The Modernization Of Solid Waste Management In Class I Cities In India*; *National Environment Policy 2006* ; *National Action Plan for Climate Change 2008*; *The CAG Audit on Municipal Solid Waste in India (December 2008)*; *Report of the Committee to frame National Sustainable Habitat Standards for the Municipal Solid Waste Management (2010;)* *Report of the Committee to Evolve Road Map on Management of Wastes in India, MOEF 2010* ; *Plastic Waste (Management and Handling) Rules, 2011*; *Electronic Waste (Management and Handling) Rules, 2011* ; *The Ministry of Urban Development circular dated March 2010* ; *Recommendations of Second National Labour Commission about Rag Pickers and The Unorganized Workers' Social Security Act 2008* all stressing the need for waste-picker recognition and integration

3.0 Waste Management in Bangalore & Attitude of the Municipality towards recognition

Bangalore generates about 3000- 4000 tonnes a day and followed a centralized system of waste disposal that is collection of unsegregated waste and transportation to the landfills. Though the Bruhat Bangalore Mahanagara Palike (BBMP), spends nearly Rs. 450 crore annually on solid waste management^{xiii}, there exists a large informal workforce consisting of waste-pickers, itinerant buyers, waste sorters, small and medium scrap dealers, whole sale dealers in the

recycling pyramid. The informal sector has had little or no formal recognition, despite the fact there have been several attempts in integrating them into the city's SWM way back in 1990 through the Waste Wise project launched by Mythri Serva Seva Samithi^{xiv}. In 2011, the Alliance of Waste Pickers Secretariat and MSSS, a member of SWMRT appealed to the Lok Adalat to recognize the efforts and following directives from the Court, the Commissioner of BBMP issued an official circular to register waste-pickers and itinerant buyers and enumerate scarp dealers. This decision helped the BBMP attain the unique distinction in the country of being the first local body to initiate the process of registration as per recommendations of the CAG Audit on Municipal Solid Waste in India (December 2008).

3.1 Approach adopted for Waste-picker Registration by the BBMP

Bangalore is divided into eight zones for administrative purposes. The circular issued by the BBMP was sent to all the eight zones. Given the size of Bangalore, it was impossible for one organization to complete the process, and hence seven organizations/institutions got together to assist the BBMP with mobilization, registration and training of waste-pickers. These organizations included REDS (Ragpickers Education & Development Scheme), Waste Wise Trust, Gilgal Charitable Trust, Grace, Divya Jyothi Trust, Namana Foundation and Radio Active CR 90.4 MHz. MSSS, in assistance with the Secretariat of the Alliance of Waste pickers and CHF networked with these organizations/institutions to build capacity and understand on ground issues of organizing. In 2011, the combined efforts of all the network partners were instrumental in initiating the formation of waste-picker – itinerant buyer membership based organization called Hasiru Dala (meaning Green force), though the process of the formation Hasiru Dala commenced from 2010 and Hasiru Dala provided the needed technical support to the BBMP

3.2 The process followed:

- The BBMP appointed the Technical Advisor and the Chief Engineer of Environmental Cell as the nodal officer for enumeration
- Hasiru Dala provided the needed technical know-how
- The environmental engineers were instructed to coordinate process in each zone
- The methodology used for registration was based on the registration process proposed by AIW the task force members in Labour Welfare, GOI on extending social security scheme for waste pickers and rickshaw puller
- The BBMP allocated a budget for printing of registration forms, data entry and creation of a centralized database and the design and printing of identity cards to waste pickers.
- Training of BBMP staff members and surveyors on the process of enumeration and registration
- The BBMP agreed to support 18 surveyors from NGOs in completing the survey and registration and issued Expression of Interest to enable the surveyors come on board
- The deadline of March 2012 was fixed by the BBMP to complete 5000 registrations

- In addition a central database was created by the IT department of the BBMP.
- A circular was issued by the BBMP articulating the methodology to all the zones

Methodology

The methodology was followed as laydown in the BBMP Circular No.: A/PSR/509/11-12

Five out of the seven network partners Mythri Sarva Seva Samithi, Gilgal Charitable Trust, Grace, Divya Jyothi Trust and Namana Foundation submitted Expression of Interest to take up the responsibility as the BBMP agreed to support upto 18 surveyors from NGOs. Only Radio Active CR 90.4 MHz, a community radio volunteered to do this pro-bono. Each organization was assigned one or two zones to complete registration and enumeration

a) Authentication

The survey requires authentication of waste-pickers through an acknowledgement in the introduction letter which forms the cover of each survey by either RWA/Scrap Dealer or BBMP AEE or Health Inspectors, certifying that he/she is aware of the waste-pickers existence in the area, ward and has been seeing the person for __ numbers of years.

b) Registration Forms

The registration form aimed to capture the following data – Location- Area , Ward number , the date of the survey, the socio- economic aspects like age, gender, education, income level , hours of work and family details, the working conditions etc in addition to the address of the waste-pickers . The registration form also aimed to collect data at ward level to assess the approximate waste that is diverted from landfills by the informal sector

Surveyors identified the areas where waste pickers lived and facilitated the registration process. In some area health inspectors introduced waste pickers residing areas to the surveyors. The survey was a collaborative effort between the Ngo surveyors and BBMP health inspectors and in some cases Engineers.

Instruction Notes

Step1: Field visit of the Slums

- Coordinate time with the BBMP Health Inspector for a visit to the slum
- The surveyors were asked to introduce themselves and the organization they belong to
- Explain the reason for the survey, duration of each survey and seek time to conduct the survey

Step 2: Conducting the Survey

It was expected that the surveyors also photo document the survey as a means of documentation for future reference

c) Central Database

The BBMP's IT department created a central database. Each zone has access to the data base through a

user ID and password and is able to upload information, thus institutionalizing the process

d)Photo Identity Cards

The photo identity cards have been created with unique numbers to aid in tracing registered waste-pickers. The Id indicates geographical location, gender and indicate age of the individual waste pickers registered

3.3 Key Milestones

- 5000 registration forms for waste pickers and itinerant buyers, 3000 forms for enumeration of scrap dealers and 1000 instruction forms were printed and distributed to the zones.
- First pilot on tested in West Zone of the City. The gaps identified from the pilot helped improve the efficiency of registration process)
- The first 20 identity cards were distributed to waste-pickers during the first Samavesha (conference) of waste-pickers in the city in August 2011. Over five hundred waste-pickers, itinerant buyers, citizens, officials and media persons from the city attended the event
- An additional 2700 identity cards were distributed in January 2012

4.0 Socio Economic Profile of Waste Pickers

The information collected through the registration survey conducted between 2011 & 2012 has been used to arrive and determine the socio-economic status of the 4175 waste-pickers and their economic contribution to the city

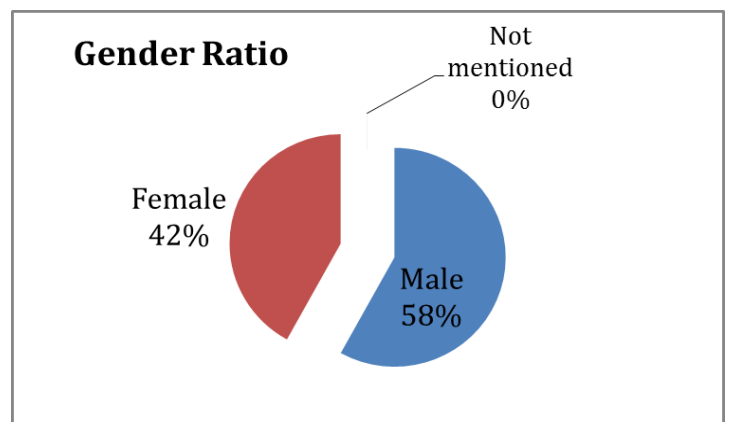
4.1 Data Analysis

4.1.1 Gender

Studies have shown that Waste-picking used to be a highly women-dominated profession.

As mentioned by Maria Muller and Anne Schienberg:

Women have several roles in the household, such as earning income and saving on expenditure, caring for members of the family and doing the domestic chores. In this regard, waste handling is an important source of income especially for the poorer women (Huysman, 1994). In comparison to men, women are mainly engaged in activities

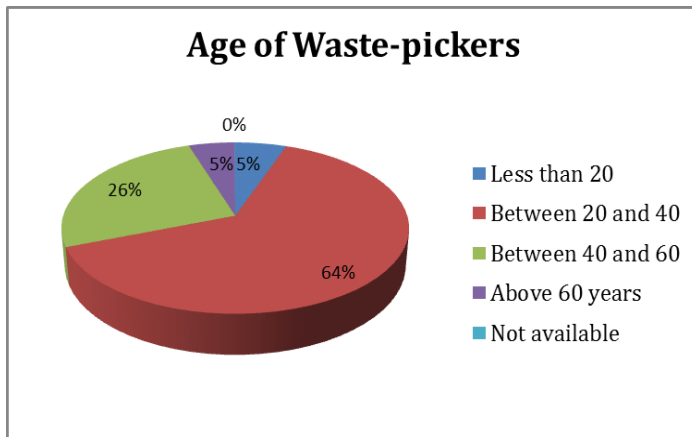


requiring lower levels of education and skills (waste picking from dump sites; sorting and washing, rather than working at machines) and a more limited range of physical activity (collection, rather than transportation)^{xv}.

Fig 1: Gender Ratio

Over the years, the sector has seen a rise in the number of men. The data analyzed reveals that of the 4175 registered, 58% are men and 42% are women.

4.1.2 Age



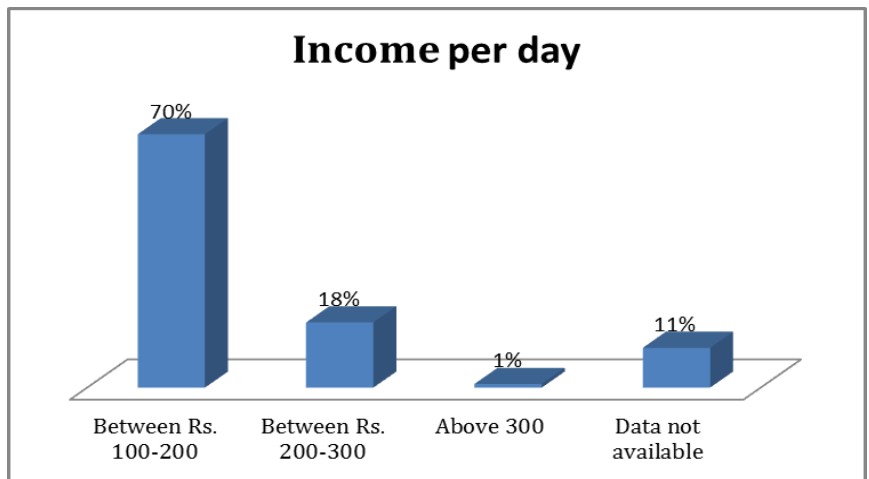
64% of the waste-pickers registered are in the age-group of 20 and 40 years and 26% are in the age group of 40 and 60 years. Only 5% of those registered are in the age group of less than 20 and above 60 years age group

However the age of the waste-pickers is a contentious issue as most of them have no clear records of date of birth.

Fig 2: Age of Waste pickers

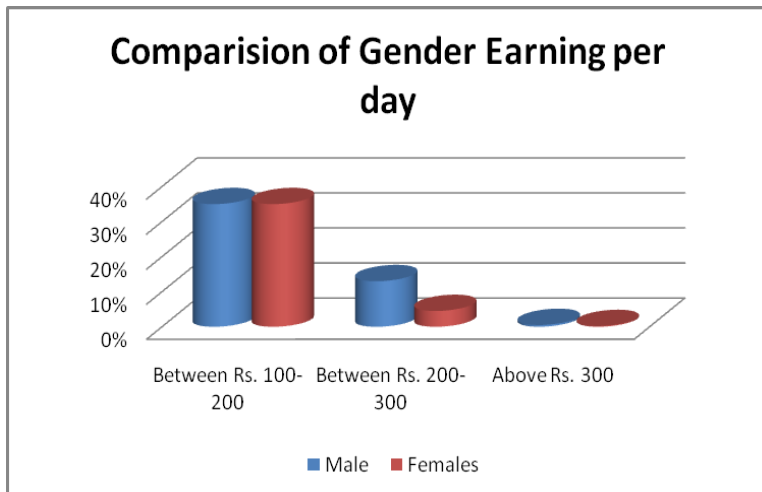
4.1.3 Income

The data reveals that 70% of those surveyed earn an average of Rs. 100 to Rs. 200 per day which amounts to approximately Rs. 3000-6000 per month, and only 18% earn between Rs. 200 to 300 a month which amounts to approximately Rs. 6000-9000 per month. Barely 1% of those registered earn above 3000 a month **Fig 3: Income per day**



4.1.4 Comparison of Gender Earnings per day - Average Earnings by Sex

It is interesting to note that while the average earnings of ranged between Rs. 100 – 200 per day for both men & women waste-pickers



Only 4.5% of Women waste-pickers registered earned in the higher range of Rs. 200 -300 per day as opposed to 13% of the men which goes to prove that gender gap in earnings exists in

the informal waste sector as evidenced by several literature studies. As mentioned by Maria Muller and Anne Schienberg:

Women also earn less than men, being more vulnerable to exploitation by employers, contractors, and waste dealers and intermediaries. Further, women do not have the range of social-cum-business contacts over a wide area of the city that men often have, and which give access to personal credit and favourable market opportunities^{xvi} **Fig 4: Comparison of Gender Earnings per day**

4.1.5 Frequency of waste-picking & Picking Pattern

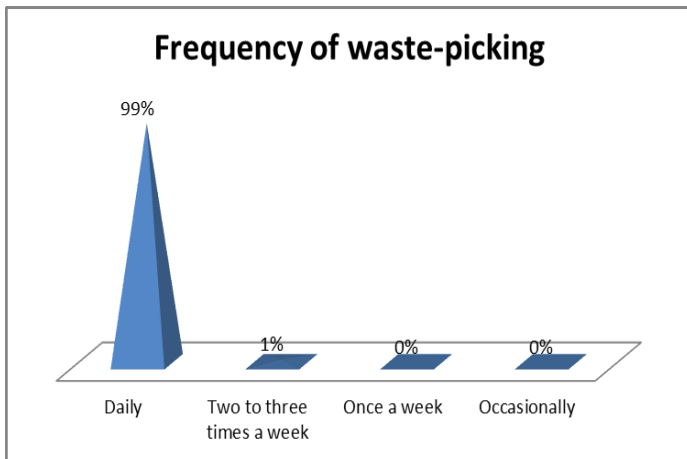


Fig 5: Frequency of Waste-picking

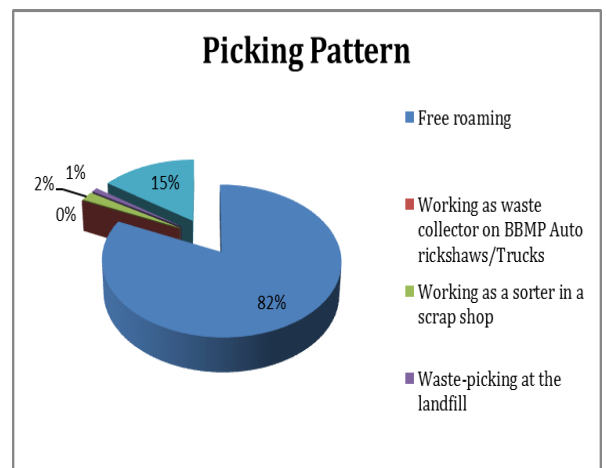


Fig 6: Picking Pattern

The data reflects that majority of waste pickers that is 99% collect or pick waste daily. With respect to picking patterns, the data also shows that 82% are free roaming waste-pickers, where as 2% works as sorters in scrap shops

4.1.6 Kinds/Types of waste picked

It comes as no surprise that plastics and road scarp figure marginally high on the type of waste collected by waste-pickers 19% and 17% respectively, though paper (17%), Metals (16%), Wires (16%) and glass (15%) also feature. Though Bangalore boasts of a robust door-to-door collection, a significant percentage of waste is retrieved on the road 82% (Refer Fig 6- Picking Pattern)

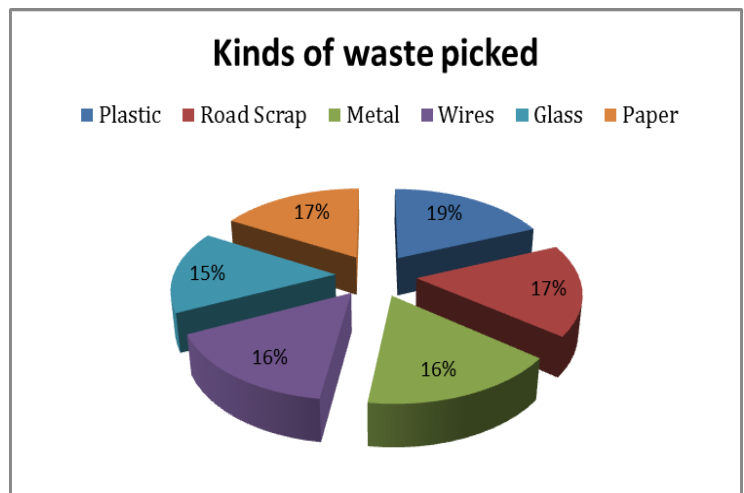


Fig 7: Kinds of waste picked

4.2 Economic Contribution of Waste pickers

On an average a waste picker collects about 60 to 90 kgs of waste per day working for about 8 - 10 hours. The working conditions vary, as there those that collect waste by carrying a sack on their back, to those who move about in a tricycle to itinerant buyers who work for specific dealers collecting only high value waste often newspapers and papers. The main difference between those who collect waste by carrying a sack and those that use a tricycle is the distance covered, while the former restrict their movements to their immediate locality and sell to a local dealer, the latter usually aggregates the waste with other waste-workers and then enters into an arrangement with middleman to trade the waste

4.2.1 Calculations in the study

The calculations in this study are based on following assumptions and extrapolations:

Assumption 1: Population Growth and the Amount of Garbage Generation

There is no clear quantification of actual waste generated in Bangalore. Various reports / articles have quoted differently. (Listed Below)

- a) *According to the Article- War over waste (November 30th, 2012), Down to Earth^{xvii}: “Bengaluru generates 3,000-4,000 tonnes of solid waste daily”*
- b) *According the newspaper report – Bangalore awards contract to convert city waste to energy (September 10, 2012)^{xviii} : India generates around 67.5 million tonnes of municipal waste per day of which Bangalore accounts for 3,000 tonnes, according to industry estimates.*
- a) *According to According to the paper titled “Towards a sustainable waste management system for Bangalore”, (2009) : Bangalore generates around 3000-4000 t/d of MSW. The total MSW generated in Bangalore city has increased from 650 t/d (1988) to 1450 t/d (2000) and today it has become 3500 t/d. Generation rate has also increased from 0.16 (1988) to 0.58 kg/capita/day (2009) attributable to development and lifestyle changes. The rapid increase from 1450 in 2000 to 3600 tpd in 2008-09 itself corroborates the above change and rising generation rate With an estimated population of 6 million, Bangalore is among the largest five cities of India... In addition, the city has expanded from about 400 km² in the 90’s to about 800 km² of greater Bangalore^{xix}*
- c) *According to the Evaluation of Technology for processing existing waste at Seven Landfill sites of BBMP, Bangalore : Technical committee Recommendations on EOI application - REPORT 03-01-2013^{xx}: Bangalore, the capital of Karnataka State is one of India's fast developing city with an average annual growth rate of 3.25 % and population of 8.4 Million (census 2011)and area of 800 sq km. Most of the study reports suggest waste generation rate of 0.4 to 0.6 Kg per capita per day. Based on this per capita consumption of 0.5 kg per capita per day is proposed as waste generation pattern for Bangalore city. Estimated Municipal Solid Waste generation*

Projection from all sources for BBMP zones is 4000 MTPD. While the increase in population has been tremendous, there has been increase in the generation of Solid waste.

- d) *According to the article titled “Bangalore amongst most polluted global cities” : “In 2008, Bangalore produced around 2,500 metric tonnes of solid waste, and increased to 5000 metric tonnes in 2012”^{xxi}*

For the purpose of this study

For the purpose of this study it is assumed that Bangalore generates about 4500 tons of waste per day.

Population: 60 Lakhs people = 3000 tons of waste (2009)

Population: 96 lakhs = 4500 tons of waste (2011)

Rationale:

The amount of waste is directly proportional to the population of the given city

As quoted in TERI (2011) Wealth from Waste Trends and Technologies (Third Edition)

“Waste generation is always directly proportion to the population”

Assumption 2: Composition of Waste

There is again a dispute with reference to the composition of waste

- a) *According to the paper titled “Towards a sustainable waste management system for Bangalore”, (2009) : Bangalore wastes have 21.27% of the recyclable materials: paper, polythene, cloth, rubber, glass and Metals, major constituent (72%) of which is organic waste^{xxii}*
- b) *According to the article titled ‘Each town in State must have action plan for effective waste management’(October 10,2012) : Wet waste composition was 60 to 80 per cent of the total waste here, while it is just 16 to 24 per cent in the west^{xxiii}*

For purpose of this study

It has been assumed that Organic Waste is 60%, Inorganic Waste (Dry Waste) is 30% and Inert waste is 10%

<i>Composition</i>	<i>Tonnes per day</i>
Organic	2700
Inorganic	1350
Inert	450

Assumption 3: Waste pickers retrieving capability

For the purpose of this study the average waste retrieved by the waste-pickers has been taken at 70kgs a day per person.

4.2.2 Economic Contribution of 4175 waste-pickers in the city

Waste saved per day (tons) per person	Waste saved by all people (tons) per day	% of waste saved in the city in day when generated	Gross waste diverted from landfill /year (tons)	Savings per day taken @ Rs. 2200 per ton (Current cost for BBMP to landfill 1 ton of waste is Rs. 2210 per ton)	Savings per year
0.07	292.25	@ 4500 tons per day = 6.4%	106671/-	Rs. 6,42,950/-	Rs. 23,46,76,750 annually

The 4175 registered waste-pickers save the city about 23 crores annually, which would otherwise cost the BBMP to spend an additional 23 lakhs of the budgeted 450 crores

4.2.3 Economic Contribution of 15000 waste-pickers in the city

Waste saved per day (tons) per person	Waste saved by all people (tons) per day	% of waste saved in the city in day (when generated	Gross waste diverted from landfill /year (tons)	Savings per day taken @ Rs. 2200 per ton (Current cost for BBMP to landfill 1 ton of waste is Rs. 2210 per ton)	Savings per year
0.07	1050	@ 4500 tons per day	3,83,250/-	Rs. 23,10,000	84,31,50,000 (which is INR 843 million, 150 thousand and 13 million, 614 thousand

		= 23%			564.83 USD
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The estimated 15,000 waste-pickers save the city about 84 crores annually

Other Contributions from Waste-pickers:

In Mumbai, India, the economic impact of waste picking has been estimated at nearly US \$1 billion a year in the recovery of materials and the manufacture of products from them. The global economic impact of waste picking activities is likely to be of several billion US dollars annually^{xxiv}

The informal waste sector currently contributes considerable, unacknowledged mitigation^{xxv}; According to a report “Cooling Agents released by the Delhi based Chintan Environmental Action and Research Group, in partnership with The Advocacy Project (AP), at the climate summit in Copenhagen the informal recycling in Delhi reduced carbon dioxide (CO2) emissions by 962,133 tons -- roughly equivalent to taking 175,000 vehicles off the road (*This study was the first attempt to quantify the impact of informal recycling on climate change in India*^{xxvi})

Recycling reduces emissions 25 times more than incineration does 3 and incinerators emit more CO2 per unit of electricity than do coal-fired power plants^{xxvii}.

5.0 Conclusion and Way Forward

It is evident that the informal sector makes a significant contribution to the overall economy as evidenced by this study and literature reviews. The BBMP is saving about 23 crores per annum from the contribution of 4175 waste-pickers in the city and an estimated 84 crores by the contribution of 15,000 waste-pickers in the city. Solid Waste disposal is the bane of urban environmental sustainability, and with unbridled consumption, use and throw culture, not in my backyard syndrome, and limited availability of land. It is time now that the law is implemented in letter and spirit. The MSW Rules also clearly mandates recycling and segregation at source which needs to be put in practice while acknowledging the contribution of the informal sector. It is estimated that at least one percent of a city’s population is made up of recyclers. Without the informal sector subsidizing costs, for the municipality the cost of recycling will dramatically increase. It is time now to strengthen this sector, and incorporating waste-pickers into waste management and recycling programs can be socially desirable, economically viable and environmentally sound.(Median 2008)^{xxviii}.

The BBMP must make arrangements to ensure the city’s solid waste management policy adopt an people- centered approach and address the following areas so that informal sectors’ be enhanced.

- **Adopt Zero Waste Approach:** According to the U.S.-based Grass Roots Recycling Network: *“Zero waste is a philosophy and a design principle for the 21st century. It includes “recycling” but goes beyond recycling by taking a “whole system” approach to the vast flow of resources and waste through human society. Zero waste maximizes recycling, minimizes waste, reduces consumption and ensures that products are made to be reused, repaired or recycled back*

into the nature or marketplace”.^{xxix}The government must enforce segregation at source and set recycling targets to minimize waste going to the landfill. It becomes equally important for the government to move away from a centralized approach and adopt a decentralized policy and invest in necessary infrastructure like the setting up of Dry Waste Collection Centers at ward level. This approach will help protect the environment, create jobs and strengthen local and regional economies^{xxx}

- Access to livelihoods: Access to waste is a first step towards providing them with access to livelihoods. Waste-pickers and Scrap Dealers must be given first preference to run the Dry Waste Collection Centers at Ward level. In addition bulk generators must be encouraged to use the services of waste-pickers to implement waste management on site. The policy must also consider the entire recycling chain and must create an enabling environment for the sector to function
- Enforcing Extended Producers Responsibility: The Government must strictly enforce EPR on manufacturing companies to invest in recycling infrastructure to purchase waste (buy-back) from waste-pickers. The Informal sector can provide efficient supply chain for the collection. EPR, if implemented correctly has the potential to improve health and safety as it directly address issues of occupational health, at one level and responsibility of protecting the environment at the other level.
- Social Security for waste-pickers: It is equally important for the government to focus on social security measures to ensure a decent standard of living and assist in poverty alleviation and reducing child labour in waste-picking.
- Formalization of Informal Enterprises and Informal Jobs: While the BBMP has made an attempt to register waste-pickers and enumerate scrap dealers, there is still a lot to be done in creating an enabling environment like creating access to finance and market information, access to government subsidies and incentives, empanelment of the informal sector, access to use public space etc for the Informal enterprise and for the waste-pickers – access to waste, minimum wage for waste sorters, social security, access to run dry waste collection centers, interventions during discrimination^{xxxi} There needs to be Special programs of micro credit and implementation of SJSRY for this sector which will help improve the recovery of dry waste and diversion of landfill.

Inclusion of informal sector can be a strategy for both effective solid waste management and poverty alleviation, both the primary responsibility of an Urban Local Body. Integrating waste-pickers will help foster urban development, promote cleaner environment and increase recycling activities^{xxxii}

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ⁱⁱ Gill, Kaveri (2010). “Of Poverty and Plastic: Scavenging and Scrap Trading Entrepreneurs in India’s Urban Informal Economy. *Oxford University Press*

ⁱⁱⁱ Gill, Kaveri (2010). “Of Poverty and Plastic: Scavenging and Scrap Trading Entrepreneurs in India’s Urban Informal Economy. *Oxford University Press*

^{iv} No clear estimates of the quantum of waste generated in Bangalore. However this figure has been arrived at from various sources.

- ^v BBMP official circular A/PSR/509/11-12
- ^{vi} SNDDT Project Proposal Advocacy for rights of waste-pickers to Oxfam India (July 2012 – June 2013) Retrieved from <http://www.oxfamindia.org/where-we-work/mumbai/sndt-university>
- ^{vii} Srinivasamoha, Ashwini, (2013), “The Rural/Urban Divide and Caste Politics”, (*Talking Trash in Chennai*) Retrieved on November 15 2013
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- ^{ix} Karanth, G.K; “Replication of dissent? Culture and institutions among “Untouchable ”Scheduled Castes in Karnataka (1995), Retrieved from http://www.academia.edu/789620/Replication_or_dissent_Culture_and_institutions_amongUntouchableScheduled_Castes_in_Karnataka and <http://cis.sagepub.com/content/38/1-2/137>
- ^x Sample Study of Informal Waste-pickers in Bangalore (September – October 2010) by CHF International and Mythri Sarva Seva Samithi (MSSS)
- ^{xi} The Waste Experts: Enabling Conditions for Informal Sector Integration in Solid Waste Management- Lessons learned from Brazil, Egypt and India
- ^{xii} Gill, Kaveri (2010) . “Of Poverty and Plastic: Scavenging and Scrap Trading Entrepreneurs in India’s Urban Informal Economy. *Oxford University Press*
- ^{xiii} Garbage mountains on Bangalore roads set to become bigger (October 21st, 2012) <http://www.thehindu.com/news/cities/bangalore/garbage-mountains-on-bangalore-roads-set-to-become-bigger/article4017326.ece>
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- ^{xv} Gender and Urban Waste Management - Maria Muller and Anne Schienberg <http://www.gdrc.org/uem/waste/swm-gender.html>
- ^{xvi} Gender and Urban Waste Management - Maria Muller and Anne Schienberg <http://www.gdrc.org/uem/waste/swm-gender.html>
- ^{xvii} Pallavi, A.; War on Waste (November 30th, 2012) Down to Earth http://www.downtoearth.org.in/content/war-over-waste?quicktabs_1=1
- ^{xviii} Gadgil, M., Bangalore awards contract to convert city waste to energy (September 10, 2012) (*Livemint.com/The Wall Street Journal*) <http://www.livemint.com/Politics/LUwkfdbj8FB00zeMRJi17J/Bangalore-awards-contract-to-convert-city-waste-to-energy.html>
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- ^{xxv} <http://www.cawinfo.org/wordpress/wp-content/uploads/2009/06/delegation-statement-and-side-event-page-2.pdf>
- ^{xxvi} India’s Trash Pickers Keep Global Warming in Check [The Advocacy Project](http://www.newamericamedia.org/news/view_article.html?article_id=846577ae93ea7eda75c30602b66aee0a), News Feature, Iain Guest Posted: Dec 16, 2009 http://www.newamericamedia.org/news/view_article.html?article_id=846577ae93ea7eda75c30602b66aee0a The report’s key finding looks at four materials -- glass, paper, metal and plastics -- and uses a methodology developed by the U.S. Environmental Protection Agency to estimate the carbon produced during the life cycle of the materials, from production to disposal. It then multiplies this by the amount recycled and comes up with the figure of 962,133 tons, making adjustments for the Indian context.
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